

**AMENDMENTS TO THE DRAWINGS:**

The attached sheets of drawings includes changes to Figures 1 and 2A-2C, to add the legend "Prior Art" as suggested by the examiner, and replace the original sheet including Figures 1-10.

Attachment: Replacement Sheets

## **REMARKS**

Claims 5-7, 12-15, 23, 24, and 28 have been canceled. Claims 1, 18, 19, 22, 25-27, and 29 have been amended to clarify the subject matter regarded as the invention. Claims 1-4, 8-11, 16-22, 25-27, and 29 are pending.

Claims 22 and 25-27 have been amended to recite specific structures and are believed to overcome the rejections under 35 USC 112.

The Examiner has rejected claims 1-4, 8-11, 16-22, 25-27, and 29 under 35 USC 102(b) as being anticipated by Hu.

The rejection is respectfully traversed. With respect to claims 1, 22, and 29, Hu describes a direct digital frequency synthesizer in which a “high speed multiplexer” is combined with a “conventional DDS”, Hu, col. 8, lines 22-25, the principle benefit of which appears to be the ability to achieve a higher output frequency  $f_2$ , Hu, col. 7, lines 21-38. The same, fixed “periodic four state sequence” appears to be used in all cases. Hu, col. 7, lines 31-38. Also, the output frequency  $f_2$  appears to be determined in advance and specified using a “frequency control word” provided as an input. Hu, col. 6, lines 53-57. Using a static “state sequence” to achieve deterministically in a single iteration a specified output frequency  $f_2$ , as taught by Hu, is not the same as “selecting a beat frequency” including by “iteratively adjusting one or both of: a negation sequence in accordance with which samples comprising the plurality of samples of the signal are negated and a sorting sequence in accordance with which samples comprising the plurality of samples of the signal are sorted into I and Q components, until a beat frequency resulting in an output having a desired characteristic is achieved,” as recited in claims 1, 22, and 29. Specifically Hu does not teach “iteratively adjusting” one or both of a “negation sequence” and a “sorting sequence” because a single, static “state sequence” is used in the approach taught by Hu. Also, Hu does not describe using an iterative process to achieve “an output having a desired characteristic,” as recited in claims 1, 22, and 29, because the desired output frequency  $f_2$  is achieved in the direct digital synthesizer taught by Hu in a single, deterministic iteration in response to a “frequency control word” provided as an input. As such, claims 1, 22, and 29 are believed to be allowable.

Support for the amendments to claims 1, 22, and 29 may be found in the present application, without limitation, at page 16, lines 10-19.

Claims 2-4, 8-11, and 16-21 depend from claim 1 and are believed to be allowable for the same reasons described above. Likewise, claims 25-27 depend from claim 22 and are believed to be allowable for the same reasons described above.

The foregoing amendments are not to be taken as an admission of unpatentability of any of the claims prior to the amendments.

Reconsideration of the application and allowance of all claims are respectfully requested based on the preceding remarks. If at any time the Examiner believes that an interview would be helpful, please contact the undersigned.

Respectfully submitted,

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